

ABSTRACT

[0067] A system and method for the measurement of the stresses and pressure perturbations surrounding a well, and a system for computing the optimum location for initiating a hydraulic stress fracture. The technique includes using sensors attached to the wellbore casing connected to a data analyzer. The analyzer is capable of analyzing the stresses on the well system. Using an inverse problem framework for an open-hole situation, the far field stresses and well departure angle are determined once the pressure perturbations and stresses are measured on the wellbore casing. The number of wellbore measurements needed for the inverse problem solution also is determined. The technique is also capable of determining the optimal location for inducing a hydraulic fracture, the effect of noisy measurements on the accuracy of the results, and assessing the quality of a bond between a casing and a sealant.